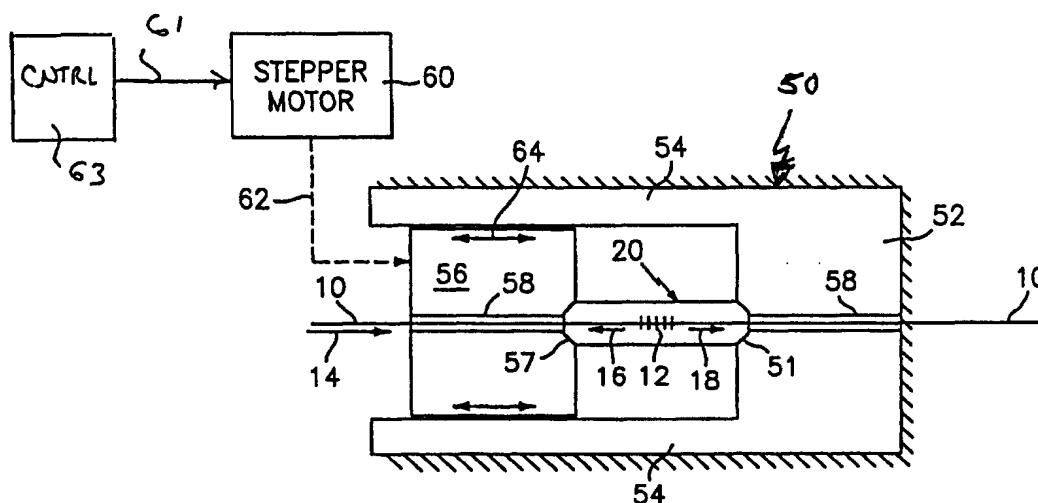




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(54) Title: COMPRESSION-TUNED BRAGG GRATING AND LASER



## (57) Abstract

A compression-tuned Bragg grating includes a tunable optical element 20, 600 which includes either an optical fiber (10) having at least one Bragg grating (12) impressed therein encased within and fused to at least a portion of a glass capillary tube (20) or a large diameter waveguide grating (600) having a core and a wide cladding. Light (14) is incident on the grating (12) and light (16) is reflected at a reflection wavelength  $\lambda_1$ . The tunable element 20, 600 is axially compressed which causes a shift in the reflection wavelength of the grating (12) without buckling the element. The shape of the element may be other geometries (e.g., a "dogbone" shape) and/or more than one grating or pair of gratings may be used and more than one fiber (10) or core (612) may be used. At least a portion of the element may be doped between a pair of gratings (150, 152), to form a compression-tuned laser or the grating (12) or gratings (150, 152) may be constructed as a tunable DFB laser. Also, the element (20) may have an inner tapered region (22) or tapered (or fluted) sections (27). The compression may be done by a PZT, stepper motor or other actuator or fluid pressure.

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# INTERNATIONAL SEARCH REPORT

Inter:      nal Application No  
PCT/US 99/28999

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7      G02B6/34      H01S3/067

According to International Patent Classification (IPC) or to both national classification and IPC

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Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data, INSPEC

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	US 5 999 546 A (JIN SUNGHO ET AL) 7 December 1999 (1999-12-07)  column 1, line 31 - line 36 column 3, line 12 - line 20; figure 1 column 4, line 25 - line 30; figure 2 column 4, line 47 - line 56; figure 4 ---	1,2,7, 12-14, 17,18, 22,23, 27-29,37
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☒ Further documents are listed in the continuation of box C.

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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